Rule-Based Analytic Asset Management for Space Exploration Systems (RAMSES), Phase II

Completed Technology Project (2007 - 2009)

Project Introduction

Payload Systems Inc. (PSI) and the Massachusetts Institute of Technology (MIT) were selected to jointly develop the Rule-based Analytic Asset Management for Space Exploration System (RAMSES) in this NASA STTR project. This system implements a modular layered architecture that enables automated multi-level asset tracking and management for both space and ground applications based on state-of-the-art RFID technology. The main advantages of this system over current bar-code based asset tracking are: (i) significant time savings through automation, (ii) real-time remote status monitoring through the internet, and (iii) rule-based analytics for proactive asset management. In Phase 2 we propose to redesign the Smart Container by taking advantage of Generation 2 RFID tag technology, lightweight RFID readers and batteries as well as integrating container technologies in a more tight and robust manner. We plan to build a total of three (3) smart containers to demonstrate scalability of the system and interaction among containers. The RAILS software will be upgraded to provide enterprise-level capabilities such as user authentication, inventory and item time history analysis, and an expanded analytic rule set. Testing will be conducted both in the laboratory and in the field to demonstrate seamless three level tracking (container level, room level, outdoors). Finally, we will perform a detailed RAMSES cost/benefit analysis and market survey in preparation for Phase 3.

Primary U.S. Work Locations and Key Partners
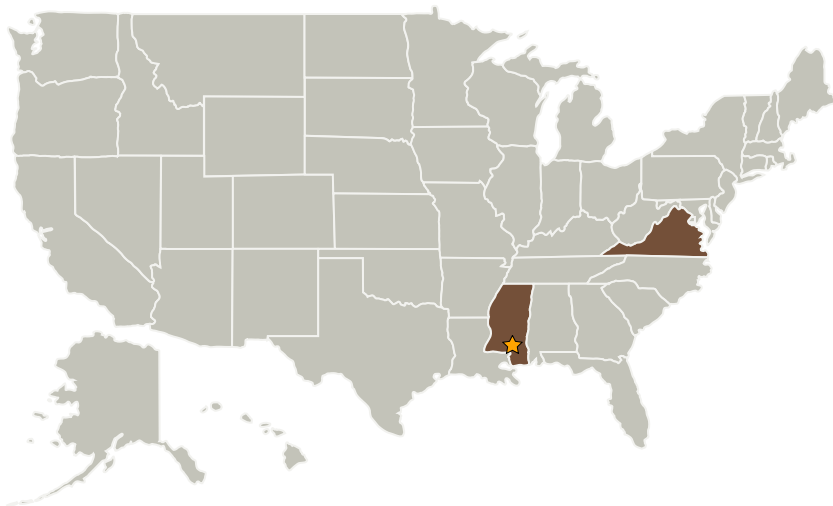
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Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Stennis Space Center (SSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
⭐Stennis Space Center(SSC)	Lead Organization	NASA Center	Stennis Space Center, Mississippi
Aurora Flight Sciences Corporation	Supporting Organization	Industry	Cambridge, Massachusetts

Primary U.S. Work Locations	
Mississippi	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX07 Exploration Destination Systems
  └ TX07.2 Mission Infrastructure, Sustainability, and Supportability
    └ TX07.2.1 Logistics Management

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Page 2